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Child-Targeted On-Pack Communications in Belgian Supermarkets: Associations with Nutritional Value and Type of Brand

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Summary

Persuasive on-pack marketing strategies, such as colourful images and games, affect children's preferences and requests. The purpose of this study was to describe the prevalence of these child-directed (i.e., aimed at children) strategies on food packages at a Belgian retailer. Although previous research already demonstrated the frequency of most of these techniques directed at children, this paper extends to food pricing and facing strategies (i.e., the number of items from the same product aligned next to each other in the supermarket shelves) which were unstudied till now. Moreover, the association between the use of these strategies, the products' (un)healthiness and their type of brand (national vs. private) is investigated. The content analysis found that 372 food products contained one or more child-directed marketing strategies on–pack, all these communications were coded; the products could be classified in 15 food categories. On average, 3.9 (*Min* = 1; *Max* = 8*)* food promotion techniques were used per package. Unhealthiness of products was rated according to Food Standards Agency (FSA) Nutrient Profile UK. We found that 89.2% of all products with child-directed strategies were considered to be unhealthy. The presence of marketing strategies was associated with higher product unhealthiness, but did not differ much between types of brand. Overall, these findings suggest that (unhealthy) foods aimed at children typically feature many on-pack persuasive communications, which implies that policy makers should (continue to) monitor this. These findings highlight the need for further research to investigate the impact of on-pack communications on children's consumption.

INTRODUCTION

The market for children's food products is expanding yearly while at the same time obesity rates among children keep on rising (Brownell and Horgen, 2004; Powell *et al.*, 2013; Schwartz and Brownell, 2007). Research on food marketing demonstrated its preponderance towards unhealthy foods (Schwartz *et al*., 2013). This has been demonstrated in mainstream media such as TV (e.g., Boyland *et al.*, 2011) and the Internet (Alvy and Calvert, 2008; Neyens and Smits, 2016). However, a frequently used but often underestimated technique pertains to food packaging, a marketing medium that is able to persuade both pre- and post-purchase. The package communicates basic information to the consumer, and creates an impression of the product or brand (Bloch, 1995; Silayoi and Speece, 2007). Therefore, package design can make a difference between a product getting noticed or not (Rettie and Brewer, 2000). Moreover, the post-purchase consumption of foods often happens in the presence of the package which thus reinforces the branding at the time of consumption. When it concerns packaging with child-directed strategies, these persuasive packaging cues and their corresponding pester power (i.e., children's requests for those products) raise concerns among child health advocates and parents (Campbell *et al.*, 2007; Campbell *et al.*, 2014). Less healthy products using child-directed strategies are more often characterized by cues such as characters, small gifts, and unusual names and colours (Institute of Medicine, 2006). Such cues establish a link between consuming the product on the one hand and fun and entertainment on the other (Elliott, 2009; Smits *et al.*, 2015). The present study therefore aims to systematically investigate the on-pack marketing cues in one large Belgian supermarket and their association with product (un)healthiness.

Calvert (2008) observed that marketers have been focusing on children for many years now, but trends such as the increased purchasing power and pester power have further increased the interest in children as important consumers. The academic research focus as

well as regulation are usually situated around advertising through television and the Internet, but the important role of packaging as a communication and marketing tool is often overlooked (Alvy and Calvert, 2008; Moore, 2006). According to a US Federal Trade Commission (FTC, 2012) report, food companies reported spending an annual $113 million on in-store marketing and packaging to reach children and teens. This does not even include all expenditures that pertain to packaging (such as endorser marketing). Nonetheless, the Commission believes that the food industry can – and should – make further progress in using its marketing ingenuity and product portfolio to address childhood obesity (FTC, 2012). Voluntary self-regulatory initiatives have been undertaken to take such child-directed marketing techniques into account. For example, when food and beverage companies signed the EU pledge (www.eu-pledge.eu), it denoted that these EU Pledge member companies committed not to advertise to media audiences with a minimum of 35% of children under 12 years (EU Pledge, 2013). The signatories of this pledge committed to not advertise food to children under twelve years old, with the exception of products that fulfil certain nutritional guidelines. In Belgium, there is the Belgian Pledge (Belgian Pledge, 2012).Food producers or other stakeholders that sign this pledge promise to act responsibly regarding their marketing towards children. Interestingly, on-package advertising is not considered in these pledges, not even in the newest EU Pledge that nevertheless considerably extends the number of media considered (EU Pledge, 2015).

Most of products using child-directed strategies still do not meet these self-imposed nutrition guidelines (FTC, 2012; Henry and Story, 2009). They contain too much fat, sugar and salt (Foodwatch, 2013). Previously, researchers did study supermarket offers of which the packaging specifically targeted children. An early Australian study showed that 82% of the total number of promotions was used to market less healthy foods to children in a supermarket and only 18% of the promotions was used to market healthy foods (Chapman *et*

al., 2006). A more recent study of products in one of the largest supermarket chains in the North-East of the USA has shown that two-thirds of promotions aimed at children stem from five food types (Harris *et al.*, 2010): cereals, fruity snacks, ready-to-eat meals, ice cream and candy. Only 10% of these products met the nutritional standards. In Canada, a similar study was carried out, it was shown that89% of 'fun food' products (products targeted at children) could be classified as too high in fat, sugar or sodium (Elliott, 2008). Another Canadian study revealed that 92% of the products in the Refrigerated/Frozen Meals category exceeded the UL (Tolerable Upper Intake Level) threshold of 240 mg Na/serving; 100% of the Processed Meat products exceeded the UL threshold; and 8 % of Dairy exceeded the UL (Elliott and Conlon, 2010). A study in The Netherlands, one of Belgium's neighboring countries, revealed that 89.6% of all products provided with marketing cues are seen as unhealthy (Van Assema *et al.*, 2011).

These earlier studies not only qualified the packages targeting children as healthy or unhealthy. They also provide an insight into which marketing communication techniques are most popular, and some even suggested a link between the use of certain techniques and nutritional characteristics. Many child-directed products imply healthiness by making use of various nutrition claims (e.g., low fat or being a source of calcium) but such claims are often misleading. For example, a content analysis of fun foods - those specifically targeted at children - in Canada demonstrated that there is a negative correlation between the presence of a nutrition claim, and the nutritional quality of a product (Elliott, 2008; see also Kaur *et al.*, 2016). Despite the potential deception by these nutrition claims, Elliott (2008) found these claims to be popular cues on fun food packaging: 62.7% of investigated packages made one or more nutrition claims on the front of the box. Others showed that the use of games was associated with a higher nutritional quality (especially for cookies), while premiums were mainly used by products with lower nutritional quality (especially for frozen products)

(Chapman *et al.*, 2006). A highly prevalent marketing technique is the use of endorsing characters and this technique has been demonstrated to be very persuasive (Smits *et al.*, 2015). The type of endorser also related to the product's unhealthiness in the study by Chapman and colleagues. Branded endorsers were mainly displayed on products with low nutritional quality, while licensed characters were more likely to endorse products with better nutritional quality. Products that include third-party licensed characters tend to be more healthy although they still do not meet the Institute of Medicine (IOM) criteria (Harris *et al.*, 2010; Institute of Medicine, 2006). Hebden and her colleagues, however, did not find a difference in the degree to which promotional characters were used to promote non-core versus other foods (Hebden *et al.*, 2011).

We typically attribute the use of such techniques like on-pack marketing communication to so-called national brands (or A-brands). These large companies are also the ones taking the blows when consumer organisations assail the food industry or their food marketing strategies. Consequently, these national labels are well-represented in the industry's self-regulation initiatives. Such brands often spend a large advertising budget, but also tend to have a higher pricing strategy than the private labels (i.e., a brand managed by the retailer brand, with the products often produced by a contract manufacturer). However, since recent years, these private labels gained an important market share within the categories of fast moving consumer goods such as foods and drinks. The latest market share data show that the popularity of private labels continues to spread across Europe (AC Nielsen, 2014). Private labels account for $1 of every $3 spent in the packaged goods market. In 2013, these brands were responsible for 30% of total marketing of supermarket products in Belgium, with an increase of 3% since 2009**.** It is clear that private labels are an important source of revenue for retailers (i.e., stores typically pertaining to a chain of stores, selling goods or commodities directly to consumers) and are competing with the national brands. Retailer chains

increasingly focus on private labels and provide them with the necessary resources which makes it harder for national brands to maintain their dominance (Kumar and Steenkamp, 2007). Despite their (increased) popularity, no research has tested the differences between private labels and national brands with regard to child-targeting marketing techniques and their unhealthiness.

In sum, previous research in different countries already demonstrated the low nutritional quality of foods using child-directed strategies available in supermarkets. Some of these studies also focused on the prevalence of specific marketing techniques and how the presence of these techniques relate to the food's unhealthiness. The present study aims to complement this previous knowledge in three important ways. First, a broad set of marketing techniques is studied, whereas previous studies tended to only look at a subset of on-pack marketing techniques. Contrary to earlier studies, we also included pricing and shelf management strategies (number of facings) as well as the difference between national labels (also called A-brands) and private labels. Second, this is the first study to document the situation in Belgium, which comprises a rather small market with 11250585 inhabitants (IBZ, 2016). Belgium is at the political centre of the European Union, but the food marketing landscape does not seem to be a frontrunner in strictly adopting the EU pledge (e.g., Neyens and Smits, 2016). Childhood overweight and obesity rates in Belgium are comparatively reasonable (OECD, 2014), although a recent study of OESO suggests that not the Americans, as most often thought, but the Austrians and Belgians consume the most calories on a daily basis (Belgium: about 3800 calories per person per day; OESO, 2013). Third, given the changes over time in how food manufacturers react to consumer organisations demanding healthier foods and honest and regulated marketing communication, it is important to amend earlier findings with newer ones. Indeed, the 2015 German Foodwatch report (Foodwatch, 2015), for instance, demonstrated that although the food targeted at children tends to become

more healthy, the manufacturers continue to almost exclusively advertise for their unhealthy products.

METHODS

We visited two supermarkets of a large retailer (Carrefour) in Belgium and carried out an audit of food packages. Carrefour is one of the largest supermarket chains in Belgium and it has a large amount of products with child-directed strategies in its assortment. Both supermarkets visited were approximately 2500 sq. ft. and contained approximately 2500 items for sale. We collected data from two supermarkets of one retailer to be sure that we sampled all the packaged child-directed food products this retailer sells. We sampled two supermarkets since small differences between them can occur and, of course, there could be an out-of-stock issue for a few goods. Hence, we sampled as many product items as possible from both supermarkets, but we left out the duplicates.

Packages were only included if they met one or more of the following criteria: it is clearly indicated that it is a food product using child-directed strategies due to a children-specific sub-brand (i.e., a brand that supports and benefits from the parent brand Carrefour, such as Carrefour Kids), the product package or the product itself has a specific geometric design that appeals to children, the package contains a funny image or games, the product made use of cues appealing specifically to children (such as endorsers, a claim, a call-to-action, or the product offers extra's like competitions, price promotions, collection ideas and premiums) (cf. Hawkes, 2004). This resulted in a sample of 372 food products using marketing strategies, which can be classified as child-directed. These sampled food products with child-directed strategies were categorized in 15 packaged food product categories as they are regularly grouped in the supermarket aisles, resulting in an exhaustive set of typical packaged foods that can be targeted to children: savoury spreads, dairy products, chocolate,

cacao powder, cereals, soft candy, cookies, cereal bars, sweet spreads, pasta, ice cream, potato products, fish sticks, crisps, and hard candy. The aim was not to analyse a particular selection of products, but to include any food targeted to children. These products were photographed from all points of view and coded. Products without a package, like fruit and vegetables were not included in the sample. Multiple variants of the same product, like a different colour, a different package or a different size were considered as different products.

For each product, a series of codes were attributed. A first code was whether the products were national versus private labels. Total price and price per unit of measurement (kilogram or litre when it pertains to liquids) constituted a second code. The vertical placement on the shelf was expressed as a percentage, based on the total of horizontal layers in the shelving. Next, the nutritional values of the product were assessed from the on-pack nutrition facts panels. Based on these data, the unhealthiness of the product could be calculated using the Nutrient Profiling Model, developed by the UK Food Standards Agency (FSA, 2009; Lobstein and Davies, 2009). In our analyses we used the continuous scale by calculating the total amount of nutrient points (the more points, the unhealthier the product) based on the nutrition label as displayed on the package. A single score for any given food product is provided by calculating the number of points for 'negative' ingredients that can be offset by points for 'positive' ingredients. The allocation of points is based on the nutritional content in 100 g of a food. Total 'A' points are calculated by the sum of points for energy, for saturated fat, for sugars and for sodium. Total 'C' points are calculated by the sum of points for fruit, vegetables and nut content, for fibre and for protein. However, we have to remark that fruit, vegetable and nut content is not mentioned on the nutrition table in Belgium. This content is always expressed in percentages. We converted the total percentages of fruit, vegetable or nut content into an amount expressed in grams. The overall score is then calculated by subtracting the score of A from C. Products whose nutrition label was missing

on the package were not included in the study. Next, we coded the presence of a variety of different on-pack marketing cues, as inspired by previous research (cues are outlined above) (Chapman *et al.,* 2006; Harris *et al.,* 2010; Hebden *et al.,* 2011). We also summed the use of all these techniques per package to a total amount of promotional techniques.

Phi contingency coefficients and Pearson coefficients were calculated to assess all individual correlations of the following variables: price of the product per litre or kg, amount of facings, different marketing strategies with the unhealthiness of the sampled products and with the use of national brands compared to private labels. Moreover, a multiple regression-analysis ruled out which variables and/or marketing strategies were the best predictors of nutrition quality.

RESULTS

Descriptive statistics

Among these 372 child-directed foods, hard candy made up the largest group of individual products sold (18.0%), followed by cookies (17.5%), soft candy (15.9%), and dairy produce (14.2%). Table 1 presents the number of products using child-directed strategies found in our sample.

[INSERT TABLE 1 HERE].

Following the Nutrition Profiling Model, each product was given a score. On average, products scored 14.17 (*SD* = 7.01). Only 40 products (i.e., 10.8%) scored below the threshold (4 or lower) in the nutrient profile model and can be considered healthy, whereas 332 (i.e., 89.2%) scored above and are categorized as unhealthy. Analyses revealed that on average

3.05 (*SD* = 1.20) on-pack food promotions were used for healthy foods and 3.95 (*SD* = 1.48) for unhealthy foods, with a minimum of 1 and a maximum of 8. This finding means that nowadays healthy foods are also using a range of marketing techniques to persuade consumers in the supermarket. Descriptive statistics for the other observed variables are given in Table 2, which gives an overview of the association between the marketing strategies and the nutrient profile of the products. For every strategy a short definition is provided.

Some of these observations stand out, for instance, 59.4% of the sampled packages displayed an endorser: 46.8 % used branded endorsers and 12.6% used licensed endorsers. On average, products had 0.96 endorsers on the front of their packaging with a minimum of 0 and a maximum of 9. 23.9% of the packages featured a call-to-action. Only 5.9% used a premium, despite the fact that they can be used to generate impulse purchases (Shimp, 2007). Also, games (9.4%), competitions (7.0%), price promotions (3.0%), and collection ideas (5.1%) were rarely used on the packages. Whereas 67.5% used a product illustration as a marketing technique, only 4% used a special package shape design, meaning that almost all packages of the sample consisted of a normal package shape. Of all child-targeting foods, 44.1% used a special product shape design. When looking at the different types of product shape design, we found that 7.3% used an animal shape, 1.6% a fruit shape, 4.6% a figure shape, and 30.6% a specific object shape. Although with 44.1% this use of special product shape design can certainly be deemed popular, prior studies did not include this technique. Finally, 10.2% of packages featured a product claim, 31.2% had a nutrition claim, and 7.0% had both a product and a nutrition claim.

[INSERT TABLE 2 HERE].

Associations between product features and unhealthiness

We analysed the association between different product features and the product's unhealthiness (see, Table 2). When looking at the correlations, we found a medium effect size (r > .3) and several rather small effect sizes (r > .1). First of all, a medium effect size was found for the association between the price (r = .45) and the nutritional value of the product with a higher price being associated with an unhealthy food product. Various small effect sizes occurred. National brands were less healthy than private labels (r = .11). By looking at the on-pack child-directed strategies, we demonstrated some other small effect sizes. The presence of a licensed endorser (r = -.12), a premium (r = -.07), a collection idea (r = -.10), a claim (r = -.11), and a nutrition claim (r = -.16) was correlated with healthiness. However, the presence of a call-to-action (r = .12), a product illustration (r = .10), a product shape design (r = .15), a competition (r = .21), a price promotion (r = .12), and the amount of strategies (r = .11) was correlated with unhealthiness of a food product.

Analysis of the association between product features and unhealthiness

To test the joint effect of all product features as predictors of the products' unhealthiness (nutritional profile - continuous), we conducted a multiple regression analysis. The results of this regression analysis are presented in Table 3. This regression model explained 13 % of the variance of the products' unhealthiness measure ($R^2 = 0.125$, $F(4,367) = 13.107$, $p < 0.001$). The predictor variables included were: type of brand, price, amount of facings and total amount of marketing techniques. We only included the total number of cues rather than each technique separately. The price ($ß = .34$) and the total amount of promotional tactics ($ß = .10$) were both significant predictors of the degree of unhealthiness of the products. In sum, our data demonstrate that both characteristics

pertaining to the retail environment and marketing techniques are used for the child-directed promotion of food products and relate to these products' unhealthiness.

[INSERT TABLE 3 HERE].

Associations between product features and type of brand

Table 4 shows the association between different product features and product's unhealthiness, we analysed the association between the features and the type of brand. First of all, national brands tended to have higher prices than private labels (r = .33), but number of facings did not differ between types of brand (r = -.03). Next, we found a difference in on-pack strategies used by national brands and private labels. The following strategies occurred significantly more for national brands: the use of an endorser (ϕ = .27) and a branded endorser (ϕ = .31), a call-to-action (ϕ = .17), a collection idea (ϕ = .11), a competition (ϕ = .12). Moreover, national brands also had a higher total amount of strategies (r = .27).

[INSERT TABLE 4 HERE].

DISCUSSION

A first finding is that higher prices related to decreased healthiness, which was the strongest direct relation. One possible reason for this is that the more foods are processed rather than unprocessed, the more their unit price tends to increase. At the same time, processed foods are considered to be unhealthy and a prime reason for the increasing obesity prevalence (Stuckler *et al.*, 2012).

We also found that the nutritional quality of the products differed according to the type of brand with national brands being less healthy than private labels. To date, research on the association between private versus national brands and their unhealthiness is largely absent. Private labels often copycat the national brands (Van Horen and Pieters, 2012), but one study showed private labels in Australia to have lower sodium levels compared to branded foods (Trevena *et al.,* 2015).

The number of product facings (i.e., the number of same packages aligned next to each other in the supermarket shelves) did not significantly correlate with unhealthiness. Food products that are placed on more prominent shelf positions are more likely to catch supermarket shoppers' attention first (Simonson, 1999). Popular items, which are usually more appealing to consumers, often receive more facings and thus more prominent shelf positions (Breugelmans *et al.,* 2007). Our study is the first to suggest that there is no difference in unhealthiness as regards the amount of shelve space. As it is the first study, future research is needed.

Next, we investigated the association between the use of more specific on-pack marketing strategies and the product's unhealthiness. The depiction of endorsers, and more specifically the often used branded endorsers, did not relate to product unhealthiness. However, the depiction of the more expensive licensed endorsers was related to better average healthiness and was used more by the more healthier products. This goes against prior findings from other domains of marketing communication where endorsers have been associated with unhealthy foods (FTC, 2012; Harris *et al.,* 2010; IOM, 2006).

The use of claims (i.e., product claims and nutrition claims) was related to the products' nutritional value. So, based on prior findings (Kaur *et al.,* 2016) we can conclude that healthy foods did use such claims more often than unhealthy foods did. Product claims were not related to product's unhealthiness, but nutrition claims (whether for low sugar,

source of iron, etc.) were. Nutrition claims are often misleading and therefore it could lead consumers to believe that the entire product item is nutritious while in fact there was no difference in product unhealthiness whether or not such claims are present. Products featuring a nutrition claim were in fact healthier compared to those without a nutrition claim. Of course, since the European regulation 1924/2006, it is prohibited to use unsubstantiated nutrition claims (see, Verhagen *et al.*, 2010).

A non-normal product shape design related to a less healthy food. This is of major importance since almost half of the sampled products used a special product shape design. Children rely on visual cues to make product decisions (Chandon, 2013; Hebden *et al.*, 2011; Lindstrom, 2008), they engage with marketing as a zone of identity construction in which product design plays a role (Lindstrom and Seybold, 2003). By demonstrating this effect, it could be of great relevance for manufacturers to offer healthier products in a specific product design such as health-suggesting fruit shapes. Also the use of a competition was related to less healthy nutritional food quality. This finding is in line with previous research, indicating that only 10% of the sampled cross-promoted products met nutritional standards (Harris *et al.*, 2010).

A last finding that needs more clarification is that the nutritional quality of the products differed by the total amount of used promotional techniques. The more techniques a package featured, the lower its nutritional quality was. These results suggest that lots of strategies are used in particular to promote less healthy foods and this is in line with earlier findings (Foodwatch, 2013), indicating that especially children are the target group of foods that contain too much sugar, fat, salt and calories (FTC, 2012; IOM, 2006). Healthy foods such as fruits, vegetables and nuts were not included in the sample since they are not always packaged. However, these products in the healthier categories are increasingly using

promotional techniques directed to children to be more attractive. Moreover, the same is true for packaged fruit, vegetables and dried fruit offered as snacks.

We also analysed how different product features relate to the type of brand (national brand vs. private label). These results are all displayed in Table 4. The majority of on-pack techniques used by national brands was represented on private labels' packaging as well, with the exception of endorsers (national brands were more prone to use an endorser, to use more endorsers and to use a branded endorser instead of a licensed one), call-to-actions, collection ideas and competitions. This roughly similar use can be described as the copycat method (Van Horen and Pieters, 2012) by which private labels create products very similar to a national brand. Still, national brands made use of more on-pack marketing strategies than private labels. This could be explained by the fact that national brands have more resources and often invest more in marketing campaigns, and some of this investment could spill over to their product packaging (Kramer, 2009). Consumers have traditionally perceived private-label products to be of lower quality than their branded counterparts (AC Nielsen, 2014). However, it has been found that the share of private-label sales differs tremendously between countries (0%–45%) and between product categories, with total share predicted to rise in Belgium from 27% to nearer 30% (AC Nielsen, 2014). Over the last 25-plus years both national brand managers and private label managers were confronted with economic contractions, which lead to this private-label growth. Moreover, national brands were partially responsible for these contractions (Lamey, Deleersnyder, Steenkamp, Dekimpe, 2012). Due to their large market share and popularity with consumers (i.e. lower price), retailers have substantial power to influence the healthfulness of the food environment by determining what products get onto the supermarket shelf (Trevena *et al.*, 2015). This also has implications for the foods children ask their parents, because of the increasing power of

retailers own private labels, which are using more and more child-directed promotional strategies.

In summary, we found that packaging in the retail environment continues to remain a significant medium to market foods to children and the majority of these foods are of low nutritional value. Our results indicated that the less healthy child-directed products more often pertain to national brands, had a higher price and made more use of on-pack techniques. Although both types of brands have a somewhat similar use of marketing techniques, we found that national brands were prone to display more call-to-actions compared to private labels. National brands also had higher pricings for their products.

Limitations and future research

The present study does have some limitations that should be addressed in future research. A first significant limitation is that only two large supermarkets of one retailer chain were examined, somewhat limiting the generalizability to other retailers. Furthermore, the period of observation in the supermarket was only a snapshot. However, common supermarket industry practices regarding product distribution suggest that this limitation should not necessarily affect the overall findings. Some of our findings also replicate earlier results from older studies in other countries. It can thus be expected that the novel findings in our study (due to the investigation of hitherto unexplored variables and associations) could also generalize to other regions. Future studies should assess potential differences in the number and type of product features and more specific marketing strategies across a wider geographic area and dissimilarity between types of food retailers. Secondly, our study focused on a broad set of food categories but we did not include all available supermarket products using child-directed strategies. Furthermore, observations of certain marketing strategies were very scarce, so no conclusive answer about possible significant effects could

be given. Therefore, future research should focus on a larger sample of products across several retailers and supermarkets.

Future research could also focus on the effect of the location of the visual elements on the packaging. An experiment may for example confirm that verbal stimuli are easier to remember when they are located on the left side of the packaging and nonverbal stimuli on the right side (Chandon, 2013; Silayoi and Speece, 2007). The effects of more subtle packaging cues such as image-sizes, depicted portion sizes, etc. (Aerts and Smits, 2017; Neyens *et al.*, 2015; Rebollar *et al.*, 2016; Tal *et al.*, 2017) could be verified. Different packaging elements can be investigated through experiments and surveys in the future. Moreover, it is not only interesting to see which marketing strategies were used on the packaging to convince children. It is equally interesting to see which marketing strategies were targeting the parents, who still serve as key decision-makers within the family. In that respect the influence of parents in general should be examined closely.

CONCLUSION

The goal of this study was to demonstrate the prevalence of the major child-directed on-pack marketing strategies directed to children, and to test the association between these strategies and the products' unhealthiness. We also specifically tested for differences between national brands and private labels, which previous literature did not explore. Overall, we found evidence for the prominent role of different marketing strategies used on packaging to persuade young children in the supermarket aisle. This study gives an overview of various strategies, and can be a stimulus for policy makers to continue with monitoring and improving self-regulatory pledges (FTC, 2012; Sharma *et al.* 2009). Nonetheless, the food industry should make further improvements to address childhood obesity (EU Pledge, 2015;

FTC, 2012; IOM, 2006), for example by not using deceptive tactics, ensuring transparency, ensuring fair competition and promoting healthy food choices.

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TABLES

TABLES

Table 1 Number of products with child-directed strategies (*n* 372) in two supermarkets of a large Belgian retailer (Carrefour)

Food categories	Frequency	%
Savoury spreads	6	1.6
Diaries	53	1.2
Chocolates	32	8.6
Cereals	31	8.3
Cacao	5	1.3
Soft candy	59	15.9
Cookies	65	17.5
Cereal bars	9	2.4
Sweet spreads	13	3.5
Pasta	2	0.5
Ice cream	19	5.1
Potato products	3	0.8
Fish sticks	2	0.5
Crisps	6	1.6
Hard candy	67	18.0
TOTAL	372	100.0

Table 2 Descriptive statistics and associations between product features and unhealthiness

	Definitions	% or *M*	*SD*	Nutrient Profile – continuous (*p*)
National brands (vs private labels)	popular and more expensive brands	83.1 %		*r* = .11* (.039)
Price/(litre or kg)	price the product costs	10.5 €	6.6	*r* = .45*** (<.0001)
# of facings	number of items aligned next to each other in the supermarket shelves	3.1	2.4	*r* = .02 (.777)
Endorser (vs no endorser)	animated character used to sell products	59.4 %		*r* = -.06 (.241)
Branded endorser	cartoon character known from a movie or series	46.8 %		*r* = .02 (.689)
Licensed endorser	cartoon created specifically to promote the brand and/or product	12.6 %		*r* = -.12* (.019)
Premium	small toy or product that is offered with product purchase	5.9 %		*r* = - .07 (.170)
Call-to-action	sentence that urges the consumer to take immediate action	23.9 %		*r* = .12* (.024)
Collection idea	intent that manufacturers use to let consumers collect items	5.1 %		*r* = -.10 (.059)
Claim	appeal that is used to advertise the product or nutrition	48.4 %		*r* = -.11* (.028)
Product claim	appeal used to promote the product	10.2 %		*r* = .07 (.176)
Nutrition claim	appeal used to promote the nutrition of the product	38.2 %		*r* = -.16** (.002)
Product illustration	picture that is depicted on-pack and appeals to children	67.5 %		*r* = .10* (.051)
Package shape design	use of a particular geometric design of package	4 %		*r* = -.05 (.356)
Product shape design	use of a particular geometric design of product	46.8 %		*r* = .15** (.004)
Game	use of a form of play for amusement	9.4 %		*r* = .07 (.164)
Competition	use of a contest for an award or goods	7.0 %		*r* = .21*** (<.0001)
Price promotion	use of a discount mark on the package	3.0 %		*r* = .12* (.020)
Total # of promotional techniques	number of on-pack communications that is used	3.9	1.4	*r* = .11* (.035)

N = 372 (total sample). Correlation with r = Pearson coefficient. **p<0.05;* **p<0.01; ***p<0.001.

Table 3 Multiple regression analysis to identify the nutrient profile of products with child-directed strategies

	Nutrient Profile – continuous (*p*)
	β
National brands (vs private labels)	-.03 (.529)
Price/(liter or kg)	.31*** (<.0001)
# of facings	.04 (.403)
Total # of promotional techniques	.60* (.045)

N = 372 (total sample). Standardized regression coefficients (betas) are used for all blocks.

**p<0.05;* **p<0.01; ***p<0.001; $F(4,367) = 13.107$, $p < .0001$ with $R^2 = .125$

Table 4 Associations between product features and type of brand

	% or *M*	*SD*	National brands (vs private labels)(*p*)
Price/(litre or kg)	10.5 €	6.66	*r* = .33*** (< .0001)
# of facings	3.1	2.42	*r* = -.03 (.959)
Endorser (vs no endorser)	59.4 %		ϕ = .27*** (< .0001)
Brand endorser	46.8 %		ϕ = .31*** (< .0001)
Licensed endorser	12.6 %		ϕ = -.07 (.206)
Premium	5.9 %		ϕ = .08 (.110)
Call-to-action	23.9 %		ϕ = .17** (.001)
Collection idea	5.1 %		ϕ = .11* (.043)
Claim	48.4 %		ϕ = .08 (.129)
Product claim	10.2 %		ϕ = .01 (.842)
Nutrition claim	38.2 %		ϕ = .07 (.151)
Product illustration	67.5 %		ϕ = .10 (.055)
Package shape design	4 %		ϕ = -.05 (.305)
Product shape design	46.8 %		ϕ = .05 (.337)
Game	9.4 %		ϕ = -.03 (.612)
Competition	7.0 %		ϕ = .12* (.017)
Price promotion	3.0 %		ϕ = .08 (.128)
Total # of promotional techniques	3.9	1.48	*r* = .27*** (<.0001)

N = 372 (total sample). Correlation with r = Pearson coefficient and

ϕ = Phi contingency coefficient. *$p<0.05$; **p<0.01; ***p<0.001